

FIG. 1B

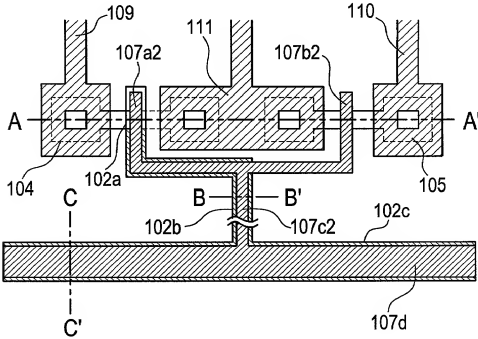


FIG. 2A

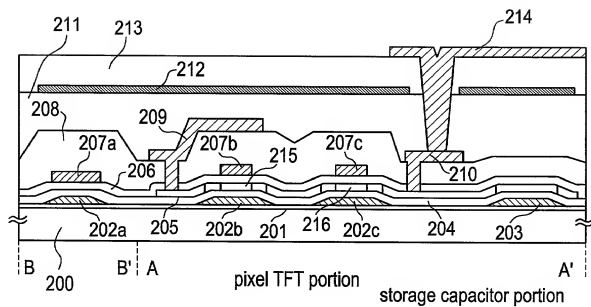


FIG. 2B

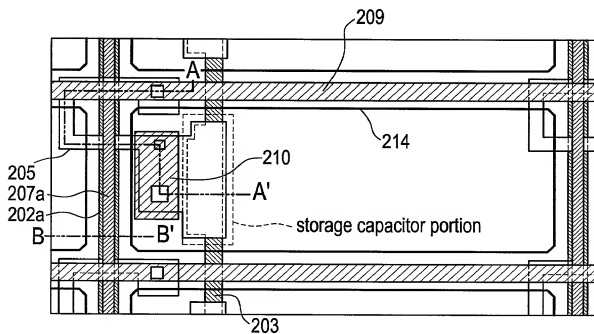




FIG. 3C

FIG. 3D

FIG. 3E

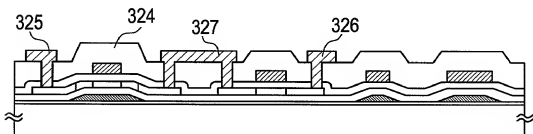




FIG. 4C

FIG. 4D

phosphorus doping step

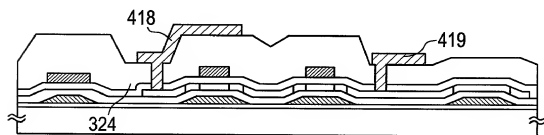


FIG. 5A

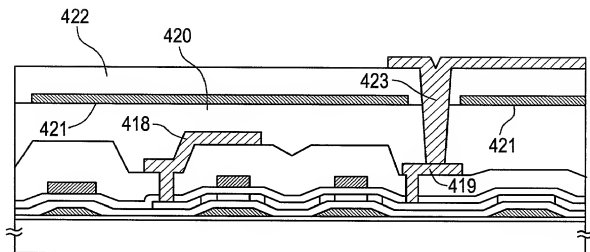


FIG. 5B

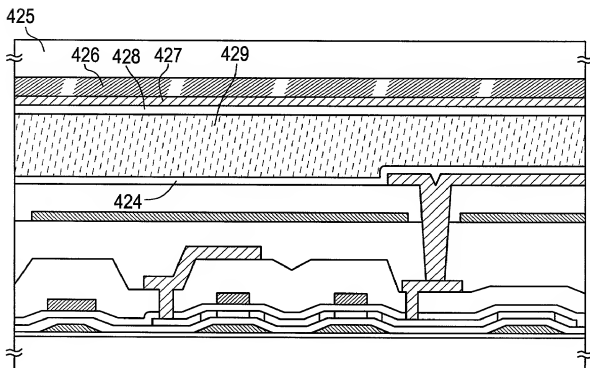


FIG. 6

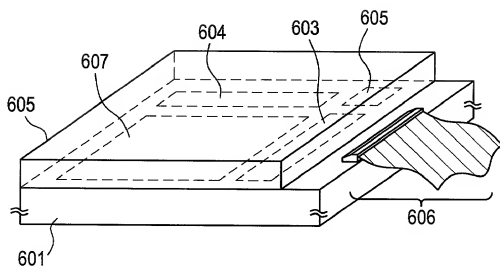


FIG. 7

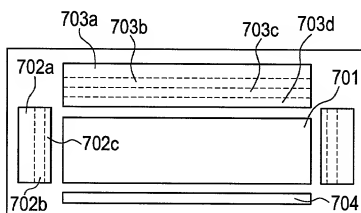


FIG. 8A

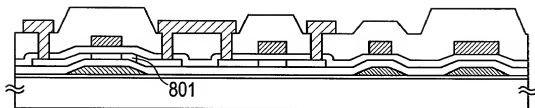


FIG. 8B

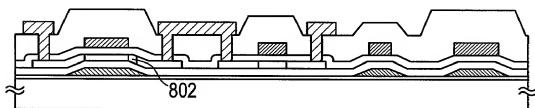


FIG. 8C

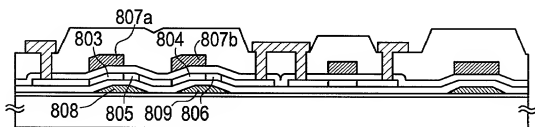


FIG. 8D

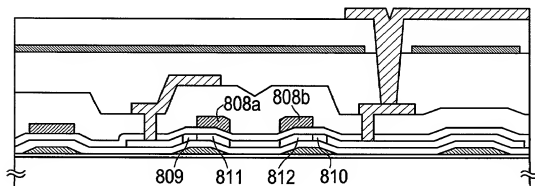


FIG. 9A

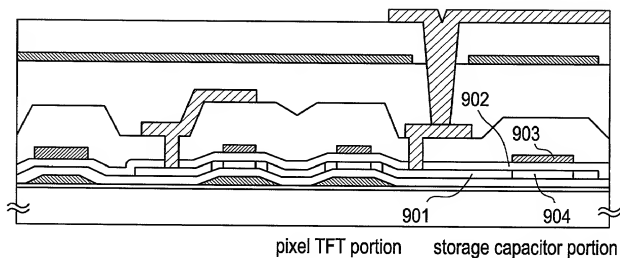


FIG. 9B

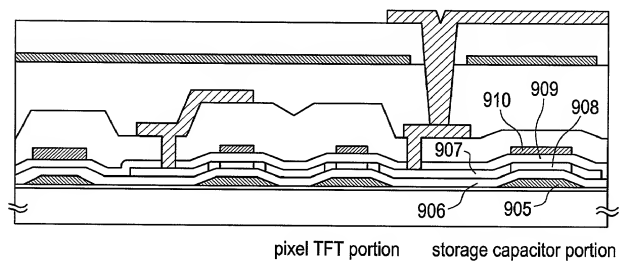




FIG. 10A

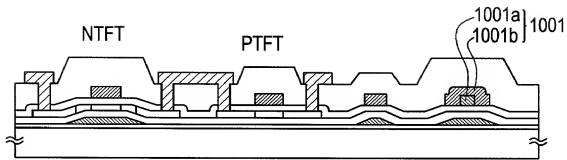
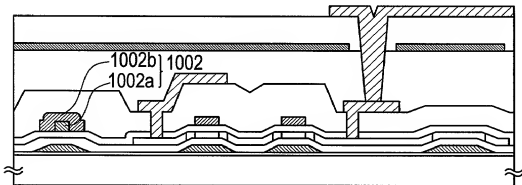


FIG. 10B



pixel TFT portion      storage capacitor portion

FIG. 11A

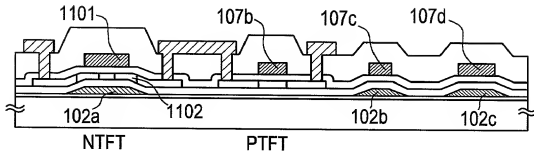


FIG. 11B

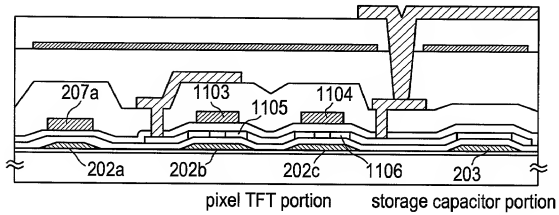


FIG. 12

gettering step by phosphorus

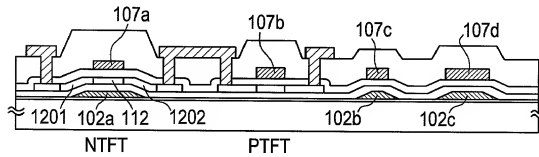


FIG. 13A

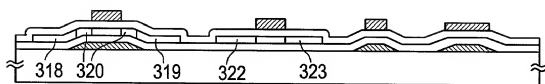
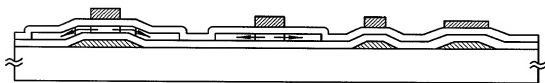
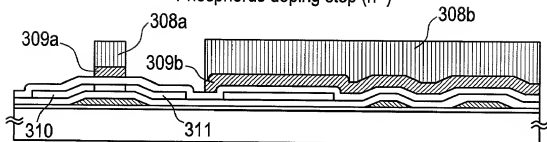
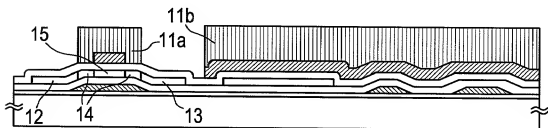
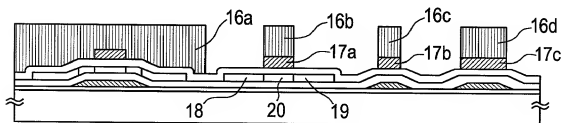
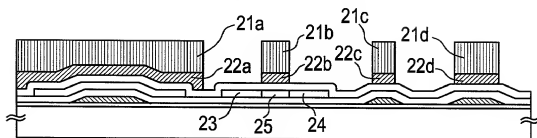
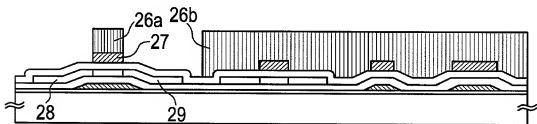
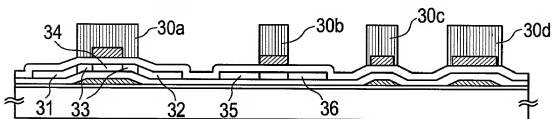
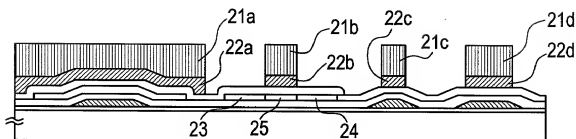
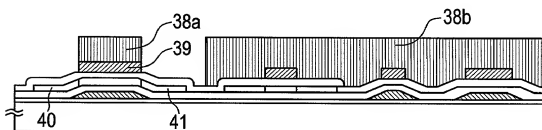
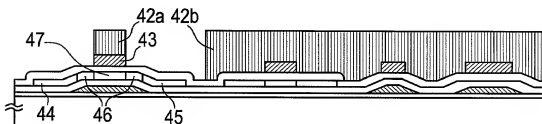


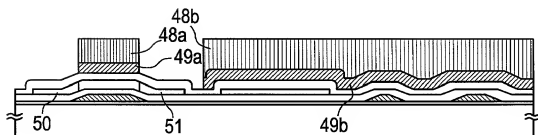
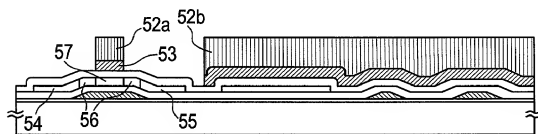
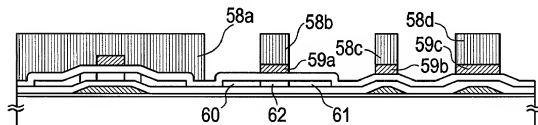
FIG. 13B



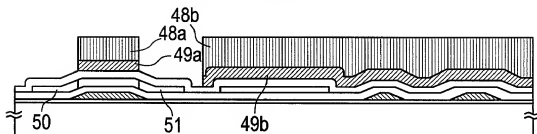
**FIG. 14A**Phosphorus doping step ( $n^-$ )**FIG. 14B**Backside exposure step, phosphorus doping step ( $n^-$ )**FIG. 14C**Boron doping step ( $p^{++}$ )

**FIG. 15A**Boron doping step ( $p^{++}$ )**FIG. 15B**Phosphorus doping step ( $n^-$ )**FIG. 15C**Backside exposure step, phosphorus doping step ( $n^+$ )

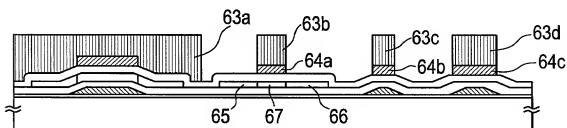
**FIG. 16A**Boron doping step ( $p^{++}$ )**FIG. 16B**Phosphorus doping step ( $n^{++}$ )**FIG. 16C**Phosphorus doping step ( $n^-$ )

**FIG. 17A**Phosphorus doping step ( $n^+$ )**FIG. 17B**Phosphorus doping step ( $n^-$ )**FIG. 17C**Boron doping step ( $n^{++}$ )

**FIG. 18A**  
Phosphorus doping step ( $n^+$ )



**FIG. 18B**  
Boron doping step ( $p^{++}$ )



**FIG. 18C**  
Phosphorus doping step ( $n^-$ )

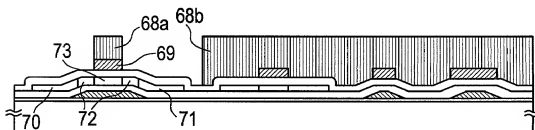




FIG. 19A

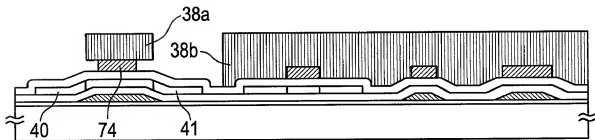


FIG. 19B

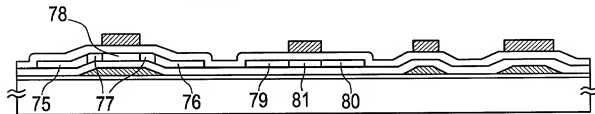
Phosphorus doping step ( $n^-$ )

FIG. 20A

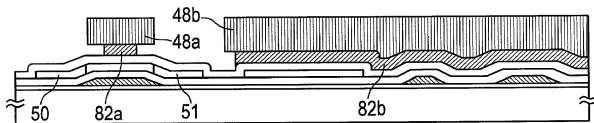


FIG. 20B

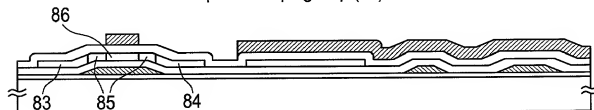
Phosphorus doping step ( $n^-$ )

FIG. 21A

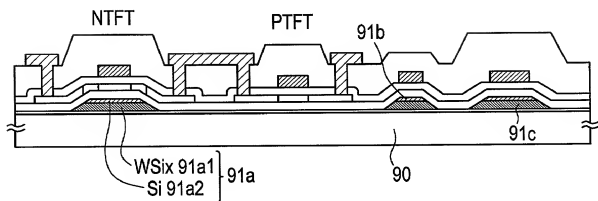
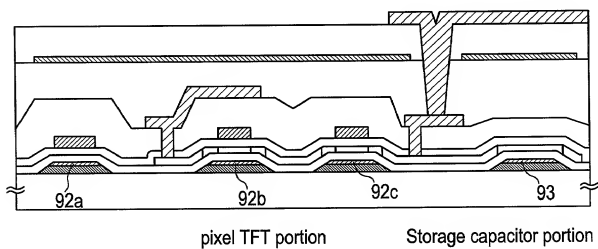


FIG. 21B



pixel TFT portion

Storage capacitor portion

FIG. 22A

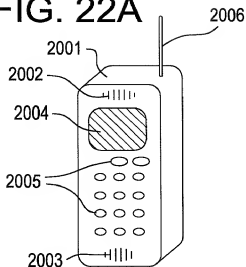


FIG. 22B

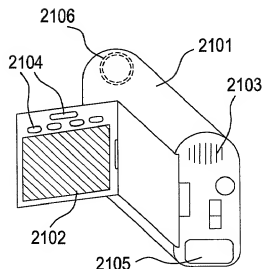


FIG. 22C

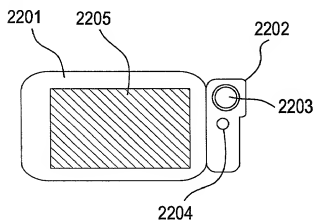


FIG. 22D

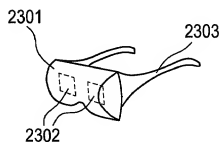


FIG. 22E

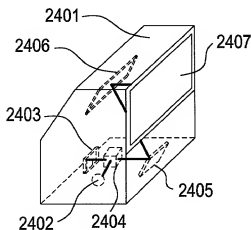


FIG. 22F

